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National Center for Agricultural Utilization Research

Biofuels

What is this technology?

Bioengineered microorganisms that efficiently and selectively convert sugars to either ethanol or lactic acid, with yields near the maximum possible for these specific fermentations.

What problem does it address?

Fibrous biomass such as:

- Agricultural wastes
- Grasses
- Wood

are difficult and costly to ferment because they contain complex sugar mixtures that most industrial microorganisms do not use. This technology allows such types of biomass to be efficiently converted to chemicals by engineering high activity into cells that ferment these sugars, while maintaining a high degree of genetic stability. Often high activity and genetic stability are traits that are at cross purposes.

Who could use this technology?

Ethanol and lactic acid producers could greatly benefit from this technology.

Over 2 billion gallons of ethanol are produced domestically each year. The potential market for fibrous biomass could be 10-15% of our automotive gasoline supply.

Global demand for lactic acid is over 1.3x105 tons and demand should continue to grow because it is the feedstock for PLA, a new bio-degradable polymer.

How is this technology unique?

These engineered organisms are capable of fermenting 5-carbon sugars to lactic acid or ethanol, which is important because up to 50% of the carbohydrates present in fibrous biomasses are in the form of these pentose sugars. The platform technology is unique because it allows for high microbial activity and superb genetic stability.

Licensing Opportunity

This technology needs an industrial partner for further commercial development. The ability to quickly ferment fibrous biomass for maximum yields could be a significant benefit to ethanol and lactic acid producers.

Stage of Development

The strain has been and is being evaluated by commercial and academic researchers for fermentation potential on specific feedstocks generated from fibrous biomass, with positive results.

IP Status

Awarded U.S. Patent 6,280,986

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